

LISTING OF CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 – 8. (Canceled)

9. (Previously presented) A crystallization process for recovering paraxylene from a substantially hydrocarbon feedstock comprising cooling said hydrocarbon feedstock in at least one refrigerated crystallization stage that is indirectly refrigerated by evaporating at least a portion of a substantially liquid stream comprising ammonia wherein said at least one crystallization stage is refrigerated by:

- a) evaporating at least a portion of said substantially liquid stream comprising ammonia from enthalpy supplied by a heat source from said crystallization process, and
- b) absorbing said evaporated ammonia from step (a) into a stream comprising a mixture enriched in water relative to ammonia.

10 – 18. (Cancelled)

19. (Original) A crystallization process for recovering paraxylene from a substantially hydrocarbon feedstock comprising cooling said hydrocarbon feedstock in at least one refrigerated crystallization stage that is indirectly refrigerated by cooling substeps comprising:

- a) contacting a stream comprising ammonia vapor with a stream comprising water and forming a liquid mixture comprising water and ammonia,
- b) recovering from said liquid mixture comprising water and ammonia a substantially liquid stream comprising ammonia, and

- c) vaporizing at least a portion of said substantially liquid stream comprising ammonia by transferring at least a portion of the enthalpy of vaporization to said substantially liquid stream comprising ammonia from said hydrocarbon feedstock.
- 20. (Original) The process of Claim 19 wherein said liquid mixture comprising water and ammonia of step (a) is further recovered as a stream enriched in ammonia relative to water.
- 21. (Original) The process of Claim 20 wherein said stream enriched in ammonia relative to water is directed for fractionation into said substantially liquid stream comprising ammonia and a stream enriched in water relative to ammonia.
- 22. (Previously presented) An ammonia absorption refrigeration process comprising:
 - a. conveying a liquid ammonia stream to an ammonia evaporator to chill and remove process heat from a crystallization process to recover paraxylene; b. sending ammonia vapor to an absorber to generate a strong ammonia aqua solution; c. pumping said strong ammonia aqua solution to an ammonia fractionator; d. reboiling said ammonia fractionator with an enthalpy source to create very pure ammonia vapor and then condensing said very pure ammonia vapor, and e. vaporizing at least a portion of said condensed ammonia by indirect heat transfer of heat from a hydrocarbon feedstock to said condensed ammonia, wherein said enthalpy source is selected from the group consisting of: condensing overhead vapors of distillation towers used to separate products, byproducts, and/or recycle streams of a crystallization process to recover paraxylene; reactor effluent streams of a crystallization process to recover paraxylene; furnace flue gas of a crystallization process to recover paraxylene; steam generated during a crystallization process to recover paraxylene; and warm streams on other chemical or refinery process units located near a paraxylene crystallization process unit.
- 23. (Original) The process of Claim 22 wherein said enthalpy source is provided at a temperature of at least about 200°F.

24. (Original) The process of Claim 22 wherein said enthalpy source is provided at a temperature of at least about 250° F.

25. (Canceled)